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ABSTRACT

The microeconomic theory relating to utility and cost is applied to the "risk," and the possible "payoff" relative to relationships with others. A good measure of utility is the need or want-satisfying power of an alternative. For the analysis of interpersonal relationships, the needs delineated by Maslow (i.e. food, shelter, belongingness, love, self-esteem, and self-actualization) provide the necessary data to make the interpersonal choice model operational. Thus individuals invest their time and "effort" (emotions) in other people in order to meet their own needs. The Capital Asset Pricing Model (CAPM) is applied to making better interpersonal choices based on the basic investment rule of maximizing the return associated with a given level of risk or minimizing the risk associated with a given return. The only difference in the economic portfolio theory relating to diversification and investment potential is that the investments are made in people instead of stocks. Specific examples of interpersonal choices conclude the article. (Author)

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INTERPERSONAL RELATIONS:

A Choice-Theoretic Framework

by

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SECTION I

INTRODUCTION

Aristotle is reputed to have stated that "the proper study of mankind is man." It may be contended that with statement the development of the social sciences was begun. Different disciplines have arisen within the social sciences to study human behavior, and each of these disciplines has taken a different view or outlook with regard to what facet of human behavior should properly be studied. Over the years, each academic discipline and its practitioners have gradually concentrated more and more on its own "proper" subject matter and less and less on contributions in other related sciences. For a time this was probably a good thing, since it enables social scientists to reap the benefits of specialization and division of labor.

Unfortunately, this process has continued to such an extent that in many cases communication is either nonexistent between two fields of study or it occurs only with the greatest difficulty. Weisskopf (1949) believes that

. . . segmentalism in the social sciences, so often and so strongly deplored, can be interpreted as a case of psychological isolation. The separation of economic, political, and social elements in the study of social reality may partially spring from the unconscious tendency to avoid anxiety-generating conclusions. This tendency manifests itself with special clarity in economic thought. (p. 305)

In recent years the dangers inherent in extreme degrees of specialization have been recognized and discussed by many alert scholars who have made serious attempts to integrate various topics. They believed that the basic problem was a lack of communication that arose because of the lack of a common vocabulary. In order to remedy this situation, mathematics--the so-called "universal language"

--was deployed in order to facilitate interdisciplinary communication. It now seems that this tactic has largely failed to achieve its aims.

We contend that the basic obstacle to interdisciplinary cooperation is the lack of a standard, unified theory to explain human behavior. More specifically, the decision-making processes of the human mind are the common element of study in the social sciences and this is what should be studied. A common vocabulary is a necessary but not sufficient condition for successful unified study. The other necessary input into this endeavor is the theory of choice. Joan Robinson, an esteemed economist and social scientist, has assessed the current state of affairs and reached the following conclusion:

After almost two centuries of development economists still do not have anything better to offer than a promise for the future. Meanwhile, the optimistic economists are working out their analyses in the simple assumption (of economic rationality) and resolutely refusing to despair of evolving in the future a technique which will allow them to assume the existence of whatever human motives have an influence on the economic sphere (1949, p. 302)

The purpose of this paper is to provide such a technique which will be a step in the process of developing this theory of choice which all social sciences must have in order to remain viable.

Nothing original of a theoretical nature will be presented at this point. The basic purpose of this analysis is to demonstrate how the methods of analysis in one social science may be fruitfully applied in another. Thus a synthesis of certain elements of several fields of study will be achieved and used to analyze a problem common to all social scientists--the study of interpersonal relationships. The pivotal consideration for all social science students is the fact that, as Aristotle would say, man is a social animal. Any attempt to explain and analyze his behavior must therefore incorporate interpersonal relationships explicitly into the analysis.

SECTION II

BASIC MICROECONOMIC THEORY

Many concepts which have been developed for use in explaining how goods and services may be produced and distributed to societal members may be transplanted and used successfully in analyzing other categories of human behavior. Perhaps the central problem with microeconomics today is that it lacks a good data source with which to operate. Economists have traditionally used discrete, well-defined variables such as money, prices, quantities of goods produced and consumed, income, etc. to explain economic behavior for individuals and certain groups in society. A rigorous body of theory employing the deductive method has been used for centuries to explain many facets of human behavior. We find no fault with the theory as it now stands.

However, the theory usually employs a set of highly unrealistic, abstract assumptions such as the stereotype of the "economic man." Many of these assumptions are simply invalid for use in solving real-world problems. An alternative data base and some slightly modified assumptions are used in this paper to make some aspects of microeconomic theory operational.

The concept of utility will be of paramount importance in the development of this model. Received economic theory was first developed and standardized by the Marginalist school, especially by Gossen, Jevons, and Walras (See Oser, 1970). It may be loosely defined as "want or need satisfying power" which a good or service or alternative provides the user. Just exactly what utility is and what its determinants are are questions which have been carefully avoided in economic theory. For example, witness the

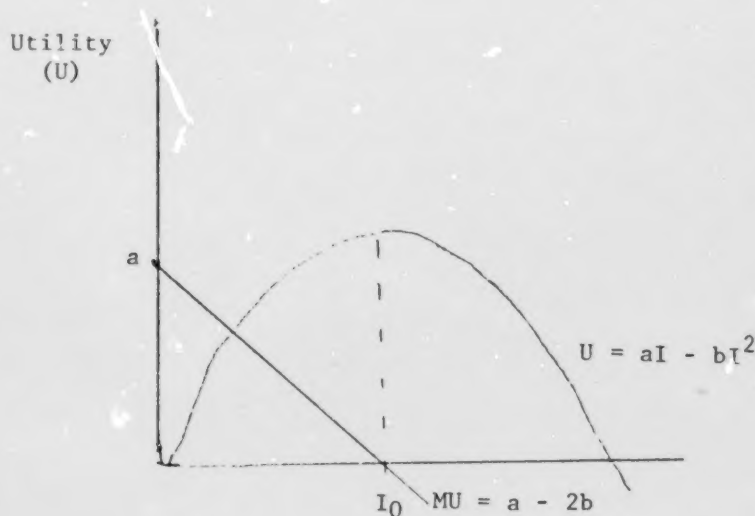
following statement by Ferguson and Maurice (1970) :

. . . Utility is, of course, a subjective phenomenon because each person's physiological and psychological makeup is different from every other's. Yet, if one sought a single criterion to distinguish modern microeconomic theory from its classical antecedents, he would probably find it to be the introduction of subjective value theory into economics.(p. 44)

Attempts to actually calculate utility in terms of an arbitrary unit of measurement called a *utile* have been made by Friedman and Savage (1948) and Swalm (1966). These authors have closely examined the relationships between utility and risk.

A related concept is that of marginal utility; it is so important that the Marginalist school was named after it. A good definition is given by Ferguson and Maurice (1970,p.45): "Marginal utility is the addition to total utility attributable to the addition of one unit of a good to the current rate of its consumption." It may be defined mathematically as the slope or first derivative of the total utility function.

Note that one form of the total utility function is the quadratic form Latane et.al (1975) because it implies the reasonable assumption that individuals are risk-averse. Its functional form is as follows: $U = aI - bI^2$, where U is utility, I is the determinant of utility, and a and b are constants. It may be graphed as follows:



Marginal utility (MU) will then be a linear function of the input (I) with the vertical intercept at point a and a slope of $-2b$. This implies that as more and more of the utility-producing unit is consumed, less and less satisfaction will be derived from it. At point I_0 , further additions of the input produce negative amounts of satisfaction and hence the total utility curve peaks out or reaches a maximum at the point where marginal utility becomes zero.

For example, many husbands and wives would not willingly spend more time together than I_0 (if this is the input) because they know from experience that they will "get on each other's nerves" or reduce their total utility if they exceed I_0 .

A central tenet of economic theory is that nothing is free; all inputs into the productive process have a price--monetary or otherwise. An important cost which has been ignored by many social scientists is that of opportunity cost. Ferguson and Maurice (6, 128) state that "the alternative or opportunity cost of producing one unit of commodity X [utility] is the amount of commodity Y [the input I_0] that must be sacrificed in order to use resources to produce X rather than Y. This is the social cost of production." It is readily seen then that when making choices between two mutually exclusive alternatives the choice which produces the greatest amount of marginal utility per dollar spent relative to other possible choices is the "correct" choice, assuming a rational decision-maker. A relative measure of this relationship between benefits and their associated costs is the quotient of the two variables.

As individuals make series of "correct" choices, they in effect move up or down the marginal utility function for each choice. It has been shown that a necessary condition for equilibrium is that these ratios must be equal for all possible alternatives. For example, a stable equilibrium for three

alternatives A, B, and C will only exist if the following relationship prevails:

$$(1) \quad \frac{MU_A}{P_A} = \frac{MU_B}{P_B} = \frac{MU_C}{P_C}$$

where P refers to the price or cost of each alternative, including the opportunity cost, time costs, and other monetary as well as non-monetary costs (6, 67; 1).

Since uncertainty with respect to the values of the variables named above is always present in the real world, we assume that what is actually used in these calculations is the expected value of each variable (9, 8-46; 10, 557). It follows then that expected utility (and thus expected marginal utility) is a function of the first two moments of the appropriate probability distribution--the arithmetic mean and the variance. It will be assumed that for most individuals the appropriate probability distribution is the normal distribution, for the Central Limit Theorem should apply in this case.

The equilibrium condition described above is a dynamic one--it comes about only through adjustments which take time to occur. Therefore, all values in the above equations should be discounted at the appropriate cost of capital to the decision-maker in order to make the values comparable. Weston and Brigham (25) state in detail how this discounting process should be implemented.

If these choices are discrete, equation (2) below expresses symbolically the equilibrium condition (1) above and if, as we assume, the total utility function is continuous and everywhere differentiable equation (3) below is relevant:

$$(2) \quad \sum_{t=0}^{\infty} E \left(\frac{MU_{A,t}}{P_{A,t}} = \frac{MU_{B,t}}{P_{B,t}} = \frac{MU_{C,t}}{P_{C,t}} \right)$$

$$(3) \int_0^{\infty} E \left(\frac{MU_{A_t}}{P_{A_t}} = \frac{MU_{B_t}}{P_{B_t}} = \frac{MU_{C_t}}{P_{C_t}} \right)$$

where t represents time and E is of course the expectation operator.

Note that we have been very careful to make only two assumptions in the theory developed thus far that may be unrealistic for some: the assumption that the relevant utility function for all decision-makers is quadratic and the assumption that the decision-maker is rational.

Whether or not most individuals are risk-averse is a good question to which no empirical answer has yet been provided. On an a priori basis, based on casual observation and the limited amount of experimentation that has been conducted to date, we believe that this assumption is a reasonably realistic one for most sane, well-adjusted individuals.

The second assumption--that the decision-maker is rational--we know to be untenable for many mental patients. Abundant evidence indicates that a substantial portion of the population suffers mental disorders of sufficient magnitude to preclude any supposition of rationality in their thought or behavior patterns. We are therefore forced to exclude these unfortunate individuals from our analysis.

One problem inherent in this model of individual choice is that some of the data required is extremely difficult to obtain using standard economic methods. In order to make this model operational, reasonably correct and accurate data must be obtained from some source. We therefore looked to standard psychological theory for guidance in this area and it is this topic which will be discussed in the following section.

SECTION III

BASIC PSYCHOLOGICAL THEORY

As we have demonstrated, the rational, deductive analysis of the preceding section is worthless if it is not possible for the decision-maker to acquire the necessary data inputs. Psychological personality theories can help to identify variables which do generate information, or at least a reasonable facsimile thereof. The basic model of personality used in this paper is that of Maslow, for it seems to pervade much of the literature and is certainly one of the most well-known and accepted theories.

The two basic core tendencies of the personality are the push toward actualization of inherent potentialities and the push to satisfy needs ensuring physical and psychological survival. Note the following statements of Maslow in comparison to the utility theory of choice previously developed:

. . . it is necessary to understand that capacities, organs, and organ systems press to function and express themselves and to be used and exercised, and that such use is satisfying and disuse irritating. . . . In the normal development of the normal child, it is now known [sic] that most of the time, if he is given a really free choice, he will choose what is good for his growth. This he does because it tastes good, feels good, gives pleasure or delight. (In Maddi, 1972, p. 101)

Perhaps the most succinct description of Maslow's theory lies in his famous hierarchy of needs. The core characteristics of personality which correspond to the core tendencies described above are, in order: physiological needs, safety needs, needs for belongingness and love, and esteem needs. Actualization tendencies are expressed by the two needs which are higher in rank than those related to deprivation: the need for self-actualization and the need for cognitive understanding.

A point which we wish to stress is that for many of these needs, people look to other people for gratification. We believe that a good measure of what economists call utility is the need- or want-satisfying power of an alternative. For the analysis of interpersonal relationships, those needs delineated by Maslow should provide the data that is necessary to make the choice model operational.

Standard monetary analysis, such as that in standard price theory, provides results for the monetary consequences of decisions but it has proved powerless for non-monetary consequences only because the necessary data inputs were lacking. If accurate measures could be obtained to express the degree to which each of Maslow's needs are or are not satisfied, better decisions would be forthcoming.

Perhaps the best way to approach the study of interpersonal relationships from our point of view is to concentrate on the basic unit of the process. Transactional analysis has stressed the importance of the transaction as this basic unit. We therefore contend that the most fruitful way to analyze human relationships is to apply the preceding choice theory to the process.

It is recognized that much of our communications with others are non-verbal. However, extreme difficulties arise when attempts are made to measure relevant variables inherent in the process. Therefore, the following analysis explicitly excludes non-verbal communication and concentrates on the analysis of strictly verbal communication.

A method of rating human verbal responses with respect to their emotional content is described in detail by Carkhuff and associates (1973). Appendix A provides a description of his method. It may be in order to point out that it is now possible to measure the emotional (or utility producing) content of a verbal interchange with the aid of an index which takes on values ranging

from zero to five. We know that the actual distribution of response levels is slightly skewed, but this should not materially affect the analysis.

Individuals are assumed to interact with other individuals in order to meet their needs--for example, the need for belongingness and love can in most cases be met only by other humans (the exception might be the case of a relationship between a pet, such as a dog, and a human). What they seek to receive from these interactions is utility. However, there is a cost associated with interaction. Need deficits may in some cases be increased by an interaction, as would be the result of say criticism of one or his work by an associate. Another important cost of interaction which has been neglected by many is the opportunity cost. Time spent with one individual cannot be simultaneously spent with another.

We believe that individuals invest their time and "effort" (emotions) in other people in order to meet their own needs. This analysis does not necessarily mean that individuals are basically selfish (though some may be). In fact, Maslow (In Maddi, 1972) explicitly states that in his view, the nature of man "as much as we know of it so far, is definitely not 'evil,' but is either what we adults in our culture call 'good,' or else it is neutral." For example, many individuals have an innate need to help others, and derive considerable utility from doing exactly that.

In reality, we must make subjective estimates of the certainty with which these costs are associated. This is why we used the expectation operator in (2) and (3) above. We know from the pathbreaking analysis of Gary Becker (1965)

that in many instances time functions as a price and may be properly regarded as exactly that. Therefore, we define marginal utility to be the product of the time spent with another(s) and the average level of positive (need-satisfying) interactions. The relevant measure, for now, is that of

emotional content as described by Carkhuff (see Appendix A). Price is analogously defined to be the product of the time spent with other persons receiving negative emotional responses. These relations may be symbolically expressed as follows, where marginal cost is price:¹

$$(4) \int_{t=0}^{\infty} E \left(\frac{MU_A}{MCA} (1+k)^{-t} \right) = \left(\frac{MU_B}{MCB} (1+k)^{-t} \right) = \left(\frac{MU_C}{MCC} (1+k)^{-t} \right)$$

The term in parentheses is necessary to discount the expected values to provide equivalent values over time.

If an individual chooses to remain alone, we assume that he in effect interacts with himself somewhat along the lines of the "self-talk" concept of Albert Ellis.

The point of this section has been to provide a theoretical framework for measuring cardinal utility using some applied personality theory. We now see that the concept of utility, while of central importance to economists, has always been relatively vague in comparison with their otherwise precise formulations. A much more accurate concept of utility is now before us.

The key element involved in this type of dynamic process is the type of market which the individual decision-makers are members of. Little has been said to date about the market dynamics involved in choosing between alternatives in different time periods when uncertainty is an important factor. It is to this subject that we now turn.

¹Time subscripts (t) have been removed from this relationship in order to simplify the notation. They are implied by the limits of integration.

SECTION IV

BASIC PORTFOLIO THEORY

Ever since the seminal work of Markowitz (1932) Sharpe (1963, 1964) and Tobin (1958) the concepts of risk and return have pervaded financial theory and inspired a revolution in financial analysis. The basic investment rule is simple stated: Maximize the return associated with a given level of risk or minimize the risk associated with a given return. While these tools of analysis have been developed for use in establishing investment criteria for assets and/or stocks and bonds, we will show in the next section how this type of analysis can easily be extended to the idea of "investing" in persons as well.

The specific tool with which we shall be most involved is known as the Capital Asset Pricing Model (CAPM). Latane, Tuttle, and Jones (1975)

have listed the relevant assumptions for the CAPM and, because of their crucial role in the forthcoming analysis, we list them here as well:

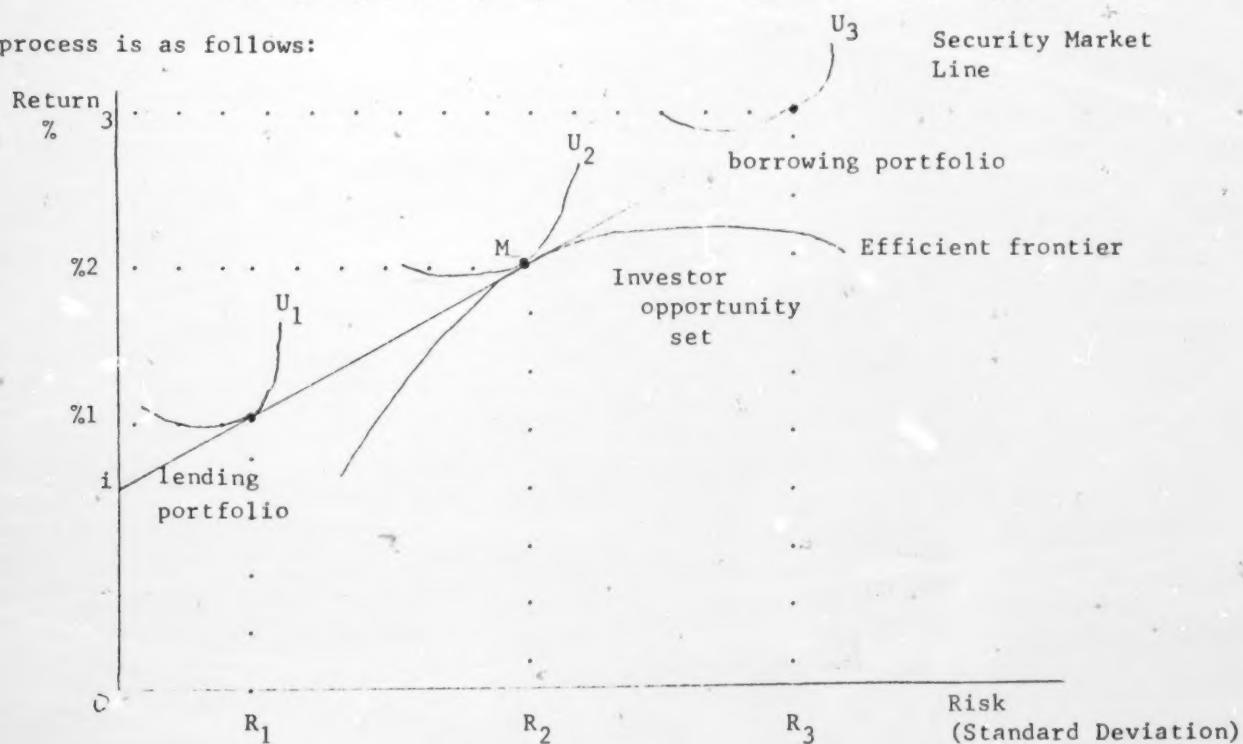
1. Investors are risk averse in that they prefer the largest return for a given level of variance or the smallest variance for a given level of return.
2. Investors act rationally in that they attempt to optimize their portfolios through efficient diversification (i.e., efficient in the context of the Markowitz framework developed in this section).
3. Investors have the same time horizons regarding the risk-return relationship for securities.
4. Investors have the same expectations concerning the characteristics of portfolios (i.e., expected returns, variances, etc.)
5. Investors have the same borrowing and lending rates, which are identical and equal to the risk-free rate of return.
6. There are no taxes or transactions costs, all assets are infinitely divisible, and information is freely available to all investors.

It is evident that the basic idea is simply to pick that combination of stocks which maximizes the return for a given level of risk, assuming that each

investor is like every other investor and has the same attitudes and expectations concerning future events.

Markowitz assumes that there are two types of risks: systematic and unsystematic. Systematic risks are those which affect the entire market and there is therefore nothing that the individual investor can do to alter this risk level--except, of course, to leave the market in whole or in part. Unsystematic risk, given by the covariance between stocks, can and should be eliminated by the efficient investor by judiciously choosing the combination of stocks in a portfolio which will in the future possess no correlations between them.

As Van Horne (1974) lucidly explains, the diagrammatic description of this process is as follows:



If the investor chooses to invest in the market, he will invest in the market portfolio (M), which is a weighted average of all stocks in the portfolio.

If the investor chooses to "play it safe" by reducing his risk level from say

R_2 to R_1 , he will invest some of his money at the risk-free rate i and invest the remainder in the market portfolio. If the investor desires greater returns than the market portfolio can give him, he will invest at R_3 (and accept the higher risk level as well). The particular point at which he will operate depends on his utility preferences, as depicted by curves U_1 , U_2 , and U_3 . In essence, he "lends" his money to the government or some other safe institution at R_1 and he borrows money at the risk-free rate to lever his returns at R_3 . At R_2 he neither borrows nor lends.

Thus we see how the Capital Asset Pricing Model predicts the relationships between risk, return, and utility preferences for financial markets. While the model has been demonstrated to be quite robust, it does lose some of its explanatory power when assumptions 1-6 above are lifted (3, 4, 5). Operational feasibility for the model was achieved with Sharpe's landmark contribution of relating security prices to each other with the use of a market index in equation (5) below:

$$(5) \quad \bar{R}_j = i + \left(\frac{\bar{R}_m - i}{\sigma_m^2} \right) (r_{jm} \sigma_j \sigma_m)$$

where:

- i = the risk-free rate
- $\bar{R}_j$ = the mean return in percent for security j
- σ_m^2 = the variance of market returns
- r_{jm} = the covariance between securities j and m
- σ_j = the standard deviation of the returns of security j
- σ_m = the standard deviation of the returns for the market portfolio

Equation (5) above produces the security market line shown in the previous diagram. Beta analysis centers around the quotient in the above equation and will not be dealt with in this paper. Much more remains to be explained about the CAPM, but we feel that a description of our synthesized model is in order. This section has provided us with the necessary dynamic framework for analysis.

SECTION V

THE MODEL SYNTHESIZED

Perhaps the best way to illustrate the results discussed in this paper is to begin by re-stating the six assumptions of the CAPM in the light of our new and broader framework. We now choose between people rather than securities.

1. Investors are risk averse and possess a utility function of the quadratic type.
2. People are rational in they choose, from all of the individuals they know, to have a variety of friends. These friends should be somewhat independent, in that they would have different backgrounds and interests and diversified response patterns.
3. Investors have the same time horizon--for example, four years might be appropriate for a college freshman whose friends are also freshmen.
4. Individuals tend to perceive each other in the same way--for example, they could if asked give basically the same description of the personality of a member of the group.
5. The risk-free rate of return would be roughly analogous to the benefits one would receive from being alone, even though we know that this is not truly risk-free.
6. Individuals have no barriers between them such as distance, status, discrimination, etc. An individual can divide his time spent with others into infinitely small amounts.

We shall trace the logic which is necessary to arrive at decisions for individual interactions. We believe that individuals do in fact follow a logical process somewhat as follows:

1. A person realizes that he does in fact exist and is alive.
2. He chooses whether or not he wishes to continue living. We assume that he chooses to live.
3. He chooses to spend all of his "free time"--time not spent on essentials such as work or sleep--either completely by himself or some portion of the time with other individuals. The decision is made by calculating the

quotient as described in equation (4) above. We assume that he decides to spend some time interacting. The precise portion of the time he interacts can be found by the use of the CAPM--say for example at point R_1 . The security market line now functions as a sort of measure of introversion or extroversion.

4. From all of the individuals in the person's investor opportunity set, the decision maker chooses only those on the efficient frontier. Specifically, he decides to spend some time interacting with the members of the market portfolio M.

5. The individual evaluates each individual he knows and assesses the marginal utility and marginal costs associated with each potential inter-actee. He then uses equation 4 to choose his portfolio--to decide who he wants to be friends with.

6. Each individual is simultaneously making these decisions, and those which have a mutual interdependency of needs will tend to become friends. In short, people are more likely to become friends if they need and depend on each other.

7. The level of involvement in the relationship is a function of the quotients described in equation (4). In equilibrium, there must be near equality for each individual in the situation. For example, if one person derives great benefits and little costs from association with another, he will tend to want to deepen the relationship. If, however, his associate doesn't really need him (the quotient is small), the two figures will not equal out and in the long run we would expect to see the relationship disintegrate or drastically change in terms of the level of emotional involvement.

Thus we see that the logical framework developed in sections II-IV is directly applicable to the analysis of interpersonal interactions. The difference is that investments are made in people instead of stocks.

SECTION VI

TOWARDS AN IDENTIFIABLE EMPIRICAL SPECIFICATION

The model which has been presented above has specified in general theoretical terms some plausible factors which would affect human relationships. While it should be quite robust theoretically, an empirical specification would have to include much more rigorous definitions of each variable. This is the major problem with implementing the model.

The first task would be to closely watch a number of individuals for quite some time to gather data on the length of time spent with each other, the average level of emotional involvement, the average number of responses, etc. This in itself would lead to errors in measurement, since the subjects would be unlikely to act in a "normal" manner if they know that their responses were being closely monitored. If they did not know, serious ethical questions could be raised as to the propriety of "spying" on subjects.

A major theoretical problem which would have to be solved would be to estimate rather precisely the cost of capital k for each person. This is a problem which also affects financial decisions, and no satisfactory solution has yet been found for its application in financial matters, where the risk/return tradeoff is much more precisely defined.

A second major problem would be to derive the subjective cardinal utility schedule for each person involved in the study. Empirical specification of this schedule has at best proceeded slowly. No progress could be made if this step was not successfully executed.

Another hurdle would be the precise delineation of the time horizons of individuals in the data base. Despite the pathbreaking work of Gary Becker (1), we know very little about the theory involved in human choices involving time processes. This may be a crucial factor in mental illness as well; for example, it has recently been reported that schizophrenics are unable to keep an accurate account of time. The phenomenon of "jet lag" and biological clocks could produce important interactions that may lead to improper specification of the model.

We have examined only a small fraction of the potential candidates of variables for inclusion in the model. A vast body of theory exists which uses variables specifically excluded from this model, and they could seriously bias results. The empirical results would probably be highly sensitive to a few additional observations, since the sample size would of necessity be rather small.

Nevertheless, it may be possible at some time in the future to solve or at least remedy the ill effects which have been discussed. In that case, it may be possible to use regression and correlation analysis to obtain reduced form equations for the model. A simultaneous-equations structure would probably be apropos in this case.

Needless to say, if an empirical specification which had wide applicability were to be obtained it would prove to be a great aid to individuals who have difficulty in interpersonal relationships--and that included most of us at one time or another.

SECTION VII

CONCLUDING REMARKS

We have proposed a theory of choice in this paper which may theoretically be applied to decisions regarding almost any subject for which data may be obtained. An illustrative application of the model to a very important area of choice--verbal interpersonal relationships--was developed and discussed.

While it is true that the model lacks a certain degree of operational feasibility, we feel that it can provide many insights into the process with which people relate to each other. Some important implications of the model in non-technical terminology are presented in Appendix B for the reader who still doubts some of the predictions of the model.

A major goal of the foregoing analysis is to demonstrate that an interdisciplinary approach to the study of the social sciences is in fact possible and in some instances feasible. It is hoped that some of the concepts expounded here will help to vindicate Joan Robinson's optimism. The choice-theoretic approach adopted and discussed here should represent a breakthrough of some import in our quest for knowledge.

APPENDIX A

CARKHUFF'S RATING SCALE

1.0 /	1.5 /	2.0 /	2.5 /	3.0 /	3.5 /	4.0 /	4.5 /	5.0 /
None of these conditions are communicated to any noticeable degree in the person		Some of the conditions are communicated and some are not		All conditions are communicated at a minimally facilitative level		All of the conditions are communicated, and some are communicated fully		All are communicated fully simultaneously and continually

APPENDIX B

PRACTICAL EXAMPLES AND ILLUSTRATIONS

1. A student parties and dates so much that he flunks out of school. He is in the borrowing region of the security market line, borrowing time that he needs for fun from his studying and work. His return (utility) is increased, but so is his risk!
2. A fraternity pledge is dropped from his fraternity because of poor grades and finds himself extremely lonely. He has not diversified his friends properly, and he finds himself with more diversifiable risk than he needed to have because he did not cultivate a broad range of acquaintances.
3. An individual has been hurt to such an extent that he withdraws as much as possible from others and finds himself a virtual hermit. He is lending his time and effort as much as possible; he therefore finds life dull and boring and yet at the same time very secure.
4. A romantic relationship blossoms and flowers, only to encounter serious difficulties which lead to "lover's spats" and reconciliations. Ultimately the relationship is re-established at a lower level of emotional functioning. Here we see the disequilibrium condition in the model at work; the quotients are not equal and the fights represent the dynamic equilibrating aspect of the model.
5. Two individuals meet, are attracted to each other, and ultimately spend their lives together in marriage. As the couple functions at an increasingly deeper level of involvement, they experience increasing marginal utility over some relevant range. Their utility functions are concave for some region and is not therefore strictly quadratic.
6. A couple finds that they enjoy their vacations much more if they spend some time away from each other. They were at or past the peak of total utility.
7. A newcomer to town gets lonely and joins a newcomer's club. Soon he has many friends. He/she is attempting to widen the opportunity set by including as many people as possible.

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